PN-ACD-576

Computer Skills Training for Palestinian Refugees

Final Report

U.S. Agency for International Development

Prepared for U S State Department and
USAID/West Bank Gaza

Prepared by Rory Phimister, Consultant to
PricewaterhouseCoopers L L P

Sponsored by Private Enterprise Development
Support Project III
Contract No PCE-0026-Q-00-3031-00
Delivery Order No 85
Prime Contractor
PricewaterhouseCoopers L L P

September 1998

PRICEWATERHOUSECOOPERS

A

TABLE OF CONTENTS

Appendices

ACRONYM LIST

Jordan	
WSTC	**Wadi Seer Training Center**
ATC	**Amman Training Center**
Gaza	
GTC	**The Gaza Training Center**
West Bank	
RMTC	**Ramallah Men's Training Center**
RWTC	**Ramallah Women's Training Center**
KTC	**Kalandia Training Center**
Syria	
DTC	**Damascus Training Center**
Lebanon	
STC	**Siblin Training Center**
ESF	**Educational Science Faculty**
IPR	**Intellectual Property Rights**
ISP	**Internet Service Providers**
IT	**Information Technology**
NGO	**Non-Governmental Organization**
PA	**Palestinian Authority**
PC	**Personal Computer**
SME	**Small and Medium Enterprise**
UNRWA	**United Nations Relief Works Agency**
VTE	**Vocational and Technical Education**
VTED	**Vocational and Technical Education Division**
VTC	**Vocational Training Center**

I. INTRODUCTION

Over the past fifteen years, computer technologies have revolutionized business and social structures around the world It is hardly possible to contemplate a world without microprocessors, the personal computer (PC) or the myriad of products and applications they make possible As the principal force driving digitalization, convergence and globalization, the computer revolution has had a dramatic impact on both the public and private sectors – from the delivery of government services to the ways that industry organizes and conducts activities More recently, this process has extended to the means by which people interact with the world around them The information revolution and the commercialization of the internet have created a truly global network that is increasingly open to governments, businesses and individuals

Concurrent with these developments, the public and private sectors have developed an enormous appetite for professional, semi-professional and trade labor with computer skills This demand ranges from high-end information technology (IT) engineers and programmers to office workers with basic computer literacy and more traditional trade labor capable of operating and maintaining increasingly advanced machinery driven by computer technologies While this has been true in advanced economies for some time, it is increasingly true in emerging markets where the proliferation of PCs is reaching a critical mass

As the role of computers has expanded in the workplace, their impact on labor demand has become impossible to ignore Skilled, semi-skilled and unskilled labor recognize the value of computer literacy This is demonstrated by the increase in and high demand for computer training courses in both advanced and emerging markets around the world This trend is further bolstered by the rapid pace of technological change that necessitates the continual update and upgrade of computer skills in order to remain competitive (*lifelong learning*)

Global competition, the dramatic increases in processing power and data storage coupled with declining hardware costs are driving demand for computer skilled labor In today's labor markets, workers that lack computer skills increasingly find themselves at a distinct disadvantage

INFORMATION AND CHANGING MARKET STRUCTURES

It is increasingly apparent that the information revolution is supplanting the industrial revolution as the engine driving the advanced economies The *information age* has arrived The speed of IT development and its continuing acceleration into the 21st century will have a profound effect upon every aspect of society from work to leisure – all within the lifetime of the current generation It is predicted that within ten years, 50% of all business will be conducted through computer networks The computer-based work environment will be paramount with computer skills becoming as important as basic literacy

IT deployment is reshaping global markets by introducing new business structures *(e-commerce)*, new concepts of education and work (*tele-learning* and *tele-working*), and by creating a global information-based environment (*cyberspace*)

All activities involving the management of information (education, health, governance, trade, leisure, travel etc) are migrating to computer-based applications utilizing nearly instantaneous communications across the information-highways that now encircle the planet

INFOMATICS AND DEVELOPMENT

IT and communications are having and will continue to have many concurrent and complementary impacts on developing countries and economies in transition When contemplating the developmental impacts, it is important to recognize that while IT presents extraordinary opportunities to accelerate social and economic change, it also creates pressing reform and investment agendas necessary to capitalize on the new opportunities and to maintain international competitiveness

Examples of new development opportunities include increased access to education and lifelong learning, improvements in governmental efficiency, accountability and transparency, increased reform effectiveness, enhanced environmental monitoring and protection, reduced isolation for disadvantaged rural and urban communities, and improved health service delivery

On an international level, major initiatives are underway to connect emerging economies to the information super highway in an attempt to foster development into the 21st century (See IDRC, World Bank, Bellanet – *Appendix I*) On national and regional levels, infrastructure programs and remote communication systems are coming on stream that permit even the most remote groups to join and take part in the new information-based world order

EDUCATION & IT

Human resource development is imperative to the success of any training program Technology initiatives most often fail due to insufficient instructor training This is especially true with computer based training *People with specific and valuable skills make technology work* A human resource base with both vocational and enterprise skills can contribute to a wide range of development objectives

Today, education is in the midst of a quiet revolution Effective *open learning* programs are quickly taking hold in cyberspace, with new opportunities for collaborative work emerging quickly Credible distance learning programs are being established in which universities and vocational schools in emerging markets are able to leverage advanced expertise through virtual teaching environments that open immediate curriculum and training opportunities at the local level

INFORMATION TECHNOLOGIES AND THE MIDDLE EAST

The countries of the Middle East traditionally lay at the crossroads of the trade routes between Europe, Africa, Asia and Russia There is every case to be made that this traditional positioning can be replicated in the information age

Recent agreements on Intellectual Property Rights in accordance with World Trade Organization requirements indicate that the Middle East can play a full and active part in the development of the global information society of the 21st century

According to a recent study by the Dubai-based Internet Arab World Research Center, over half a million people in the Middle East are already working on the internet with an average user age of 29 years, 7 years younger than their US counterparts (Internet Usage in the Middle East, February 1998)

The recent proliferation of Internet Service Providers (ISPs) in nearly every country in the Middle East, the establishment of cross-border networking systems (i e Arab World Online), and the development of software capable of handling Arabic script all indicate that information and communication technologies are eagerly being taken up in the Arab world

The increasing number of technology fairs in the region (i e Internet World Abu Dhabi '98), the establishment of regional production and distribution centers by the main manufacturers of hardware and the appearance of local ISPs are also testimony to the proliferation of computer technology in the Middle East Computerization is advancing across a broad spectrum of public and private sector concerns and is now penetrating small and medium enterprises (SMEs – businesses employing 25 people or less)

UNRWA & Refugee Education

In his book about the information revolution, The Third Wave, the American economist Alvin Toffler described the Palestinian people as a "dynamic minority" in terms of their ability to change and adapt to major social upheavals This dynamism is founded on an educational imperative that has produced literacy rates, educational standards and university graduate numbers that are among the highest in the Middle East The achievements of the Palestinian people both regionally and internationally in business, commerce, management, education, health and government administration, all testify to the importance of education and learning within Palestinian society

Since its inception in 1951, the United Nations Relief Works Agency (UNRWA) has played a vital role in the provision of social services to the Palestinian refugees in Middle East In addition to elementary and secondary education, UNRWA also provides a program of vocational training and continuing education in an effort to enhance this marginalized and disadvantaged group's social and economic status

UNRWA first introduced computer-training courses at the Vocational Training Centers (VTCs) in 1988 This came at a time when the international community was beginning to focus on Palestinian human resource development in an effort to capitalize on the Palestinian cultural priority for education

Over the last 10 years there has been a proliferation of indigenous Palestinian self-help and community development organizations established to promote training at all levels of Palestinian social and economic activity

Since the signing of the Declaration of Principles in 1993 and the establishment of the Palestinian Authority (PA) in the West Bank and Gaza, major international initiatives have been made in the education sector to update the curriculum These efforts include initiatives to provide technological inputs at the secondary and tertiary levels to meet the needs of the new information-based society

OBJECTIVE

This report aims to examine the current role of computer training within the Vocational and Technical Education (VTE) program in UNRWA's five fields of operation The report also evaluates the modalities by which UNRWA's training can be enhanced to provide the maximum employment opportunities for Palestinian refugees in the 21st century

The report examines the immediate need for a broad range of program upgrades, new technological inputs, and revisions in existing vocational training to ensure that the Palestinian refugee workforce is able to meet the emerging economic challenges and to provide a platform for future development This report assumes that Palestinian vocational training efforts must be prepared for the fundamental changes in education delivery that are being leveraged through IT applications

Future strategic investments, sufficient support for instructor training and sustained curriculum development over a reasonable project term (3-5 years) are prerequisites for the promotion of vocational training for Palestinian refugees The effort described below provides only part of a larger picture concerning the future of vocational training for Palestinians in the Middle East

The issue of vocational training must be addressed at the local and regional level by both public and private sector concerns In an ideal world, the efforts of the various actors would be coordinated However, in the absence of such formal controls, it is important to build lines of communication so that a consensus might emerge

Just as the export of Palestinian expertise played a vital role in the economic and physical development of the region, the potential *virtual* export of Palestinian knowledge and skills through information technologies should not be discounted Given the right mix of hardware and instructor training, vocational training institutions could provide key building blocks in the development of the core competencies needed to compete in the 21st century

II. The United States Initiative

In an effort to ensure that UNRWA vocational training graduates remain competitive and continue to meet the needs of local markets, the United States government aims to assist UNRWA in developing a comprehensive plan to upgrade and update its computer training facilities and programs This undertaking is predicated on the belief that the United States can leverage its own expertise in this area to assist in a wider effort to deliver valuable training opportunities for Palestinian refugees Specifically, this effort will build on UNRWA's preliminary assessments and draw on existing programs in the region with proven success rates (i e Jordan's Vocational Training Corporation, Syria's Khan Ash-Shieh training facility, and the Ramallah Women's Training Center to name a few)

The need for this effort is based on the recognition that curriculum rationalization will only achieve marginal results in the absence of a significant program to update and upgrade existing facilities, curricula and instructor skills

III. SKILLS DEMAND ANALYSIS

METHODOLOGY

This analysis draws on past research by senior UNRWA planners, extensive consultation with the Vocational and Technical Education Division (VTED) specialists, field directors and instructors and is augmented by a series of public and private sector interviews conducted in each field of operation These included government ministries (labor, education, and commerce), public and private sector training programs (vocational and university programs), NGOs and private sector companies considered high consumers of skilled labor (computer resellers, banks, print and electronic media, engineering firms and others)

A note of caution is appropriate at this point While there appears to be significant growth in demand for a range of computer skills, it is important not to over-state market needs or understate other players rushing to meet this need At best, this assessment represents rudimentary estimations Although this effort provides a reliable snapshot of local demand, it is not a substitute for the more comprehensive and accurate results that would result from systematic market surveying The Palestinian Ministry of Labor provided an excellent model for local market surveying in their publication Meeting the Challenge, 1996

LOCAL MARKET DEMAND SIMILARITIES

In order to compete effectively in local and regional markets, labor must possess basic computer literacy and a broad cross-section of computer knowledge, including computer skills in areas of specialization and general computer aptitude (*the ability to grasp quickly new software and hardware applications*) For example, entry-level civil engineers must possess traditional office skills (typing, project management etc), familiarity with the Windows operating system and advanced knowledge of a complement software from AutoCAD to the MS Office Suite – Word, Excel, Access, and PowerPoint)

The need for a mix of skills is especially important in the other areas of specialization (business and finance, engineering disciplines and computer science) where both the public and private sectors have deployed current hardware and software The need for general computer aptitude is strong because of the increasing number of customized software applications found in the private sector

The labor markets in the five fields of operation, Westbank/Gaza, Jordan, Lebanon, Syria, and the Gulf, closely resemble one another in general terms This is due to the fact that over the past five to seven years, the public and private sectors in the five fields of operation have undertaken significant and ongoing modernization efforts These developments have included the implementation of computer systems that meet the latest standards – a trend that is particularly evident in the private sector In comparison with other areas of vocational training, demand for labor with up-to-date computer skills is strong throughout the Middle East

In all of UNRWA's Fields of operation, there is a notable shortage of computer skilled labor in the following areas (1) the print & electronic media, (2) business and commerce, (3) network installation and administration, and (4) hardware and software maintenance Low penetration rates and rapid advances in hardware and software applications coupled with declining costs will continue to drive demand for labor with skills in these areas

While the majority of graduates find work in local markets, many graduates (particularly those from Lebanon) also find work in the Gulf and further afield where markets are at the forefront of the technology curve

LOCAL MARKET DEMAND DIFFERENCES

Local market differences are characterized by disparate private and public sector development, market size, issues of local stability and access to job opportunities in advanced neighboring economies where demand for technical labor is strong

Jordan

While recent figures suggest that the local economy is contracting, opportunities for those with strong computer skills have grown consistently over the past 10 years This is due to the fact that during this period the Jordanian economy has undergone significant change

Led by an increasingly open and outward-looking economic policy, the Jordanian private sector is slowly gaining strength, confidence, and depth, giving Jordan one of the more dynamic economies in UNRWA's fields of operation Growth has been concentrated in the financial, service, building and tourism sectors – all consumers of computer-literate labor

Demand for technical labor is strong across a broad section of the Jordanian economy Demand appears to be especially strong for labor with computer skills in accounting and business applications, graphic design, multimedia and desktop publishing, architectural and civil engineering and PC / network installation, administration and maintenance

The Jordanian software industry is small but growing quickly, a fact not lost on Israeli software developers While the growth of cooperative initiatives hinges on the success or failure of the peace process, future development in this area could well lead to increased opportunities for VTC graduates

Palestinians enjoy full access to the Jordanian labor market

West Bank/Gaza

The West Bank/Gaza market is different from the other fields of operation because of the relatively small size of its internal economy, its underdeveloped infrastructure, relatively new business and political structures, import/export restrictions and issues of periodic instability that make long-term planning difficult

While these factors have worked to discourage the kind of international investment that increases demand for computer skilled labor, there has been a fair amount of investment by the PA and in the private sector by members of the Palestinian expatriate community who have returned to establish new businesses Returnees from the Gulf ('91 Gulf war) and those that came with the PA (1994) brought with them new expertise and ideas These factors have worked to raise the level of computer skills called for in the local market

One sector that *has* seen international growth is the financial sector Following the establishment of the PA, a number of regional and international banks and insurance companies either returned (Amman Cairo Bank, The Bank of Jordan, The Arab Bank and others) or established new offices (The British Bank) In addition, a number of new banks and insurance companies have been established that are entirely Palestinian-owned

The construction sector is the fastest growing area of the Palestinian economy Architectural engineers, technical draughts-men and those with land surveying skills readily find work

In discussions with both government and private sector actors, it was revealed that there is also demand for network technicians, graphic/multimedia designers, and those with business and finance skills An emerging trend in both the public and private sector is deployment of local and wide area networks This is driving demand for technicians and network administrators and those able to maintain and support PC hardware and software

It is possible that those with strong computer skills might find work in Israel, but restrictions on labor mobility currently make this difficult As local infrastructure and expertise develops, it may be possible to establish tele-centers for collaborative work

Syria

The Syrian economy remains dominated by government intervention With oversized and poorly equipped public and financial sectors, the Syrian economy is struggling to keep pace with the changing world around it Serious macroeconomic policy issues continue to plague development of Syrian markets Nevertheless, Syria enjoys tremendous potential with one of the more diversified economic bases in the Middle East due to a healthy mix of natural resources, strong primary and secondary education, past emphasis on light to medium industry and recent strategic investments in infrastructure

Over the past eight years, the Syrian economy has undergone rapid and fundamental change driven primarily by growth in the private sector Low labor costs and strong education is attracting considerable interest from other regional players, particularly from the Gulf Areas enjoying significant growth include the pharmaceutical, housing, print/media design and tourism sectors

The public sector is the one area that is not considered a consumer of skilled labor due to outdated and under-funded infrastructure within the government sector This may change as Syria moves closer to joining the Euro-Med initiative It was recently reported that Syria has accepted European Union help to overhaul and automate the banking and financial sectors However, in the absence of meaningful and far-reaching economic and business law reform,

these efforts will not be sustainable For this reason, special emphasis should be placed on developing links with the private sector as the source of future absorption

It is worth noting that the Syrian government recently proclaimed the development of computer and information technologies a strategic imperative Efforts to promote computerization include a government funded and run computer-training center, university computer specializations and zero tariffs on the importation of computer products

Palestinian labor enjoys full access to the Syrian labor markets

Lebanon

Although the Lebanese market is experiencing a tremendous boom due to government reconstruction efforts and the return of expatriate and international capital, the Lebanese economy remains officially closed to Palestinians Lebanese law bars Palestinians from working in most areas of the Lebanese economy Still, Palestinians with advanced skills readily find work despite these restrictions, although with lower remuneration due to black market pricing

The Gulf

Given the extremely limited opportunities in Lebanon, many Palestinians also look for work in either the regional or international markets, especially the Gulf While opportunities in these markets were limited following the Gulf War, recent and continuing rapprochement within the Arab community may reopen these markets to Palestinian labor

Characterized by the latest and best that technology has to offer, the Gulf markets are capable of absorbing a wide range of technical labor If relations continue to improve among the PA, Jordanian and Gulf governments, Palestinian labor will once again find meaningful and lucrative opportunities It should be noted that this might not hold true for those living in Syria and Lebanon, as non-passport holders, Palestinians from these fields are finding it increasingly difficult to find work in regional markets

Concerned governments should use their good offices to promote improved opportunities for Palestinian labor in the Gulf In addition, UNRWA should work overtime to rebuild relationships with governments and private sector concerns in the Gulf

IV. THE UNRWA VOCATIONAL & TECHNICAL EDUCATION PROGRAM

In 1997/1998, education accounted for nearly 50% of the Agency's budget and is the single largest activity within the UNRWA program of activities UNRWA's eight Vocational and Technical Education (VTE) centers (three in the West Bank, two in Jordan and one each in Gaza, Syria and Lebanon) form the backbone of existing international efforts to assist Palestinian refugees acquire marketable skills Spread across five fields, the eight Vocational Training Centers (VTCs) have a combined capacity of 4,650 places for students at the post-preparatory and post-secondary levels The VTE program offers two-year specialized training courses The school year is 40 weeks long with 42 periods of instruction per week The facilities generally operate between 7 30 a m and 3 00 p m

The Vocational Technical Education Division (VTED) at the UNRWA headquarters in Amman oversees the VTE activities As one of the four divisions within the UNRWA Department of Education, VTED has 11 specialists responsible for various sub-disciplines within the overall vocational training program The specialists monitor and evaluate courses within their portfolio, coordinate curriculum development, guide and train instructors and propose facilities maintenance and upgrades (See *Appendix II*)

The VTE program is divided into two tracks, trade and semi-professional, each made up of a number of specializations The trade courses are open to students that have completed the post-preparatory level (9 – 10 years of schooling) while the semi-professional track requires completion of secondary education (12 years of schooling) Last year there were 2,658 students enrolled in the trade courses (57%) and 1,992 students in the semi-professional track (43%)

It is worth noting that, despite outdated facilities, staff and development cutbacks and the resultant flagging curriculum, the VTED reports that the semi-professional vocational training specializations are over subscribed by an average of four applicants for every one position and that significant demand exists for course graduates

Local curricula must meet the minimum requirements of the Ministries of Higher Education within each host country In practice, the locally prescribed curricula are augmented and supplemented by the VTED specialists and by the instructors in the field This accounts for the high success rate of UNRWA graduates in local government qualification exams

In the West Bank, Gaza and Jordan, the training programs fall under the local "Community College Program" As such, graduates must take local exams and receive a diploma upon successful completion The Agency distributes its own diplomas for those that complete training programs in the other fields of operation (Lebanon and Syria)

UNRWA's financial problems in recent years have, however, had a negative impact on the VTED's ability to ensure that the Agency's VTCs keep pace with technological change and market demand Agency cost reduction measures in the vocational education area have limited procurement of needed training equipment, reduced the number of specialists responsible for curriculum development, and constrained the growth of training to levels significantly below the

refugee population growth rates These factors have limited the effectiveness of VTE programs, quantitatively and qualitatively

The list below details the semi-professional courses offered by the VTCs

- Architectural Engineering
- Banking & Financial Management
- Business Administration
- Civil Engineering
- Computer Information Systems
- Graphic Design
- Industrial Electronics
- Land Surveying
- Medical Laboratory Technician
- Mechanical Draghtsman
- Office Management
- Pharmacist Assistant
- Physiotherapy Assistant
- Preschool Education
- Secretarial & Medical Records
- Social Work

V. COMPUTER SKILLS TRAINING

The VTED has long recognized the need to provide a range of computer-training opportunities within the VTE programs During the early 1990s, the VTE centers were considered an emerging leader in the area of computer training Graduates of the VTE programs enjoyed high job placement rates in all of the fields of operation (with the exception of Lebanon where employment opportunities are highly restricted by the Lebanese government) This is especially true of graduates at the semi-professional level who benefit from computer skills training The directors at the eight field centers all report excess demand for graduates with computer skills In keeping with this trend the UNRWA educational programs have been supplemented by a variety of NGO, government and private sector training initiatives to meet growing computer skills demand

Broadly speaking, there are two levels of computer training within UNRWA's semi-professional training program – those that provide computer skill sets as part of a larger curriculum and those that focus solely on computer skills specializations Currently, only two centers offer the full two-year computer-focused specializations, the Ramallah Men's Training Center and the Ramallah Women's Training Center in the West Bank Beginning next school year (1998 – 1999), the Gaza Training Center and the Damascus Training Center will also offer two-year specializations in advanced computer applications topics The rest of the centers offer computer training as part of their wider curriculum

The semi-professional stream receives the bulk of the computer training courses In fact, among the trade courses, only the "Office Machine Maintenance" specialization has a computer component This track deserves considerable attention and will be dealt with as a distinct item below Likewise, all of the trade courses should be reviewed to evaluate changing technological requirements

In addition to the yearly load, the VTCs offer a series of short-term courses in conjunction with local governments and NGOs in an effort to meet specialized labor and market needs For example, the Kalandia Training Center in the West Bank ran a series of courses in conjunction with the PA to provide specialized training for ex-detainees in a range of specializations Similarly, the Wadi Seer Training Center has been conducting specialized short-term courses in conjunction with the Jordanian and Japanese YMCA

It is also important to note that the Amman Training Center (ATC), the Ramallah Women's Training Center (RWTC) and the Ramallah Men's Training Center (RMTC) share facilities with the Educational Science Faculty (ESF), an UNRWA run four-year teacher-training college These computer training facilities are strained by providing courses for 120 more users per center per year

VI. EXISTING COMPUTER FACILITIES

The computer lab(s) at each field location maintain a collection of hardware and software purchased or donated over the past 10 years While some minor equipment purchases and donations have been received during the past three years, most of the equipment was purchased in the late 1980s and early 1990s

All of the centers suffer from an acute lack of current hardware and software

The configuration of computer labs at VTCs include computers with 286, 386 and 486 processors (the majority being 286 machines) with 4 – 8 Megabytes of RAM and 20 – 40 Megabytes of hard-drive storage All of the centers boast a few Pentium machines with specifications capable of supporting a range of current software applications

Table 1 Computer Lab Configuration at VTCs Number of Machines/Number Working

Existing Hardware	Training Centers							
	RMTC	RWTC	KTC	STC	DTC	WSTC	ATC	GTC
286	29 / 24[1]	22 /11	7 / 0	17 / 8	—	13	15 / 10	8 / 6
386	9 / 7	2 / 1	—	—	—	—	4 / 4	—
486[2]	14 / 14	23 / 20	—	20 / 15	10 / 8	20 / 18	6 / 6	10 / 8
Pentium 100	12 / 12	2 / 2	—	—	5 / 5	—	—	—
Pentium 133	1 / 1	—	6 / 6	—	—	—	—	—
Pentium 166	1 / 1	13 / 13	—	—	—	—	10 / 10	—
Pentium 200	—	—	—	13 / 9	—	20[5]	—	—
Dot Matrix Printer	7 / 7[3]	2 / 0[4]	4 / 2	2 / 2	—	1 / 1	—	—
LaserJet Printer	3 / 3	2 / 1	1 / 1	—	1 / 1	—	1 / 1	—
LCD Display Unit	—	—	—	—	—	—	—	—
Overhead Projector	3 / 3	—	1 / 1	—	—		—	—
Plotter	—	—	2 / 2[3]	1 / 1	—	—	—	—
Scanner	—	—	—	—	—	—	—	—
Total Workstation[4]	—	—	1 / 1	—	—	—	—	—
Network	—	—	—	—	—	—	—	—

1 Typical Configuration of the 486 = 4 MB RAM / 650 MB Hard Drive
2 These plotters are more than 7 years old and are unable to support recent software upgrades
3 Considered the standard tool for land surveying
4 *On order for the past five months*

A ASSESSMENT

The hardware at the VTCs is outdated and bears little resemblance to the current state of technology found in both the public and private sectors The varied and severely inadequate range of hardware and software makes the delivery of market-relevant curricula nearly impossible, a situation that has worsened over the past three years Furthermore, the disparate hardware configuration hinders seriously the work of the educational specialists, as they are unable to design a common curriculum that can be easily replicated at the different field centers

The training facilities lack current PCs, printers, scanners, LCD overhead display units (mandatory for the effective delivery of computer training to groups of more than five) and specialized equipment and software needed to train engineers and draughtsmen (Plotters, Total Workstations, current versions of AutoCAD etc)

The current configuration requires excessive staff oversight and maintenance For example, due to meager hard-drive capacity at the computer lab at the WSTC, instructors must load and unload software on 20 machines twice a week in order to deliver training courses in each discipline This is a considerable effort, especially since instructors already maintain the computer centers beyond their normal duties (due to the freeze in new hires that began in 1993) This is beyond

the time capabilities of the instructors at other centers, resulting in some software being left off of the curriculum

In short a comprehensive hardware, software and instructor skills training program is needed

VII Existing Human Resources

UNRWA has been able to attract an impressive cadre of instructors across all areas of specialization with the VTE program The VTED has every right to be proud of their instructors This is especially true concerning the computer instructors and the specialists responsible for this discipline Qualifications in this area included B Sc Computer Science degree holders (70%) and a number of M Sc degree holders in Computer Science, Computer Engineering and Computer Information Systems, not to mention a small number of Ph D level instructors

UNRWA's ability to attract top talent stems from high local unemployment coupled with relative job security The ongoing expansion of the private sector occurring in all local markets is steadily eroding the ability of the VTED to attract and keep qualified personnel Furthermore, the severe technological constraints described above and the lack of skills development opportunities has significantly undermined moral among the staff, reducing incentives to maintain and upgrade skills and the teaching curriculum

Today, the VTED is faced with the fact that its field centers are unable to support the current curriculum or to deliver market-relevant skills Trainees are being taught on machines and software that are three to eight years behind the state of technology found in local markets (both public and private sector), a fact not lost on the student body Students reported frustration at the overall lack of up-to-date facilities and high student-to-machine ratios (in some places as high as 5 1)

UNRWA, once considered the leader in computer training, can only watch as its position in the labor market and its reputation for excellence is eroded by public and private sector development This is true in all five fields of operation The UNRWA is now losing market share to public and private training centers that are rushing to meet increasing demand for computer literate labor

It should be understood that participation in private training opportunities is well beyond the means of most refugees It should also be noted that in the absence of increased incentives it is only a matter of time before the VTED loses instructors to the public and private sectors

VIII GENERAL RECOMMENDATIONS

A. OPTIMIZATION

Program expansion during this period has only been possible through the elimination of redundant and under-subscribed courses Working within tightly subscribed and under-funded budgets, the VTE programs and facilities have been stretched beyond capacity for some time

Led by well-qualified, highly competent instructors and education development specialists, the staff has done a remarkable job given the mixed hardware/software configurations at each VTC

All of the specializations are in need of comprehensive updating to introduce market-relevant skill sets

1 Facilities Optimization

If the current hardware configuration persists, UNRWA should consider "dumbing down" the software configuration to provide a common, more functional platform capable of operating in a timely and realistic fashion This would include running older, less demanding versions of all software on machines running both Windows 3 1 (386 and 486 processors) and Windows 95 (Pentium processors) so as to provide a workable environment in which to conduct training programs

In the West Bank, the three training centers could work in closer cooperation to share facilities and reduce redundancies, although to a large extent this has already been carried out Any such effort should not be allowed to reduce the scope of the RWTC, as this would mean decreasing opportunities for women It should be understood that many women would not be able to participate in the VTE program if courses were conducted in close combination with either the RMTC or the KTC

Given the small size of the KTC program and its close proximity to the RMTC, the KTC training programs could be conducted at the RMTC facility (if properly equipped) This would minimize the need for a fully equipped engineering lab at the KTC and reduce equipment, administrative and oversight costs However, this would require careful study and should not be undertaken hastily Eliminating the KTC training lab would preclude program development in other areas of specialization and should only be considered as a last option

2 Curriculum Optimization

Over the past seven years, program rationalization has seen the revision and elimination of a number of outdated and redundant courses The VTED has worked hard to optimize course offerings Given the current hardware configuration, further curricula optimization would require combining courses to reduce software, hardware and instructor demands This might include combining two of the engineering specializations into a single course with a much

broader engineering focus or combining the *Business Administration* and *Banking & Finance* specializations

Likewise, the agency should reconsider the emphasis on lower end trade specializations Demand for higher technical qualifications is on the rise while demand for trade courses is in decline

Although the specialists at the VTED in Amman oversee curriculum development at the eight VTCs, individual centers are free to customize their curricula in order to meet local educational and market demands This has led to significant curriculum variations from center to center within a number of specializations

Individual VTCs are preparing to add the same or similar specializations without the benefit of shared development (due to lack of communications facilities) For example, the RWTC, RMTC, GTC and STC have all been working to introduce a "*Computer Studies / Computer Information Systems*" specialization with little in the way of shared curriculum development Not only does this represent duplication of effort, it also fails to leverage scarce human resources agency-wide

Improved communication and coordination between the specialists and the VTCs and between individual VTCs is needed to minimize curriculum differences, provide a platform for internal coordination, ensure common curriculum development, leverage human capital across the VTCs and facilitate replication of successful programs

3 Feasibility of Optimization Strategies

While the optimization strategies outlined above would ease the overall burden on the facilities, instructors and administration, they would require abandoning a number of the more advanced applications and specializations and would necessarily accelerate the ongoing deterioration of the overall computer-training program Such actions would reduce dramatically the ability of the VTCs to produce graduates with competitive skills and would degrade the scope and impact of the semi-professional specializations Equally damaging, they would further reduce morale amongst the instructors and staff

While "dumbing down" the software configuration and combining related courses into one another would help relieve the current situation, they are not considered viable options if the UNRWA VTE program is to maintain its current mandate in any meaningful fashion

Real and meaningful curriculum optimization must start with the instructors While the instructors are well educated and dedicated, most lack the advanced computer skills training within their areas of specialization needed to increase computer components within the curricula

Given sufficient facilities and instructor re-training, all specializations should have computer contact time expanded to cover more advanced topics This effort must begin with curriculum review and market surveying to determine needs (see below)

With the exception of the most recently added computer specializations and the architectural engineering specialization, the current curricula offer little more than introductory courses This is especially true of the following specializations Civil Engineering, Land Surveying, Business Office Practice, Business Administration, Secretarial and Office Management, Pharmacology, Paramedical Technician, and Industrial Electronics

4 Office Machine Maintenance & Industrial Electronics

Two courses in need of revision are the *Office Machine Maintenance* (trade) and the *Industrial Electronics* (semi-professional) specializations These courses should include significant computer training components

The *Office Machine Maintenance* course currently provides training in the maintenance and repair of typewriters, telephones, fax, and other devices that are either disappearing from the workplace (typewriters) or rapidly converging into one device – the computer

None of the field centers have been able to upgrade their programs in order to offer significant training in computer hardware/software maintenance despite the fact that the VTCs and the private sector report high demand for PC maintenance skills

Similarly, with the exception of the DTC, the *Industrial Electronics* course offers training in electronic processes but fails to account for Local Area Network design and implementation, another area with exceptional employment opportunities The DTC expended considerable efforts developing a curriculum to meet this growing need The DTC lays the groundwork for the replication of similar curricula at other VTCs

While the instructors and specialists recognize the growing demand for labor with computer hardware and software maintenance skills, the VTED is unable to provide computer maintenance training within their curriculum These shortcomings are due to the rapid introduction of PCs in local markets over the past five years and the complete lack of funds needed for a curriculum upgrade and supporting hardware

Any hardware and curriculum upgrade should include the introduction of computer hardware and software maintenance training in the Office Machine Maintenance specialization and more advanced course work in LAN design, installation and administration in the Industrial Electronics specialization

Hardware for expansion of these programs should be drawn from older UNRWA hardware as it is replaced

5 Graphic Design & Desktop Publishing

Graphic design and desktop publishing skills are in high demand in all fields of operation and in regional markets This fact was not lost on the RWTC, where a graphics design specialization was recently introduced following extensive market research and curriculum development

Both the course design and the survey methodology used to determine the viability of the course should be considered models for other VTCs (see Appendix III) The graphic design curriculum would provide excellent benefit at any of the training centers that choose to adopt it

B. NEEDS ASSESSMENT FOR FACILITIES UPGRADE

In the event that funding for the computer labs is forthcoming, a comprehensive upgrade program should aim to meet the following objectives

- Provide a common, cross agency platform
- Build-in comprehensive staff development programs
- Deliver equipment in a timely fashion
- Introduce networked environments
- Build exclusive relationships with hardware & software suppliers
- Implement the highest possible specifications

1 A Common Platform

With sufficient funding, the ideal program would include a comprehensive upgrade across all five fields of operations This would provide a common, agency-wide platform for the VTC computer labs The piecemeal pattern of minimal equipment upgrade that has characterized the past eight years has hindered the work of the VTED and is a drain on the instructors' time and resources

At present, planners are unable to keep track of the varied hardware and software specifications found in each field This is not due to any failure in effort, but rather to the widely disparate configurations found in each field of operation It is exceptionally difficult to plan for eight field centers running three different operating systems on machines that vary in age from one to eight years Multiple configurations have rendered any curriculum development almost meaningless

A common platform would allow the VTED to develop comprehensive training and curricula packages that could be replicated at each training center Of equal importance, a common platform would provide flexible architecture that would simplify future maintenance and upgrade programs

2 Hardware & Software Suppliers

In order to benefit from economies of scale and educational pricing, and to facilitate future hardware maintenance and upgrade, equipment should be purchased from a single manufacturer, a company with a recognized track record and the ability to support its products in the field Preliminary meetings and communications with three of the major manufacturers resulted in commitments to provide educational pricing and additional incentives based on an exclusive purchase order for this project Likewise, VTED should purchase all software under the

educational discount option as agreed to during the consultants' meetings with Microsoft Middle East

The VTED and UNRWA should aim to establish preferred customer relationships such that discounted equipment and training opportunities are leveraged from pending equipment purchases

3 Specifications

Hardware upgrades should embrace the latest possible standard in order to ensure the longest possible equipment life An upgrade would provide for short and medium term needs (3 to 4 years) at which time UNRWA will need to replace the motherboards in all the machines UNRWA should begin to strategize for this need

4 Networked Environment

Placing 25 machines in a lab without a network would be unsound and irresponsible A network allows administrators to carry out tasks on multiple machines making the software and hardware maintenance and administration far more efficient Of equal importance, a networked environment would allow UNRWA to provide a working environment for the information systems courses currently being introduced into the curriculum and would allow for the expansion of this curriculum in other fields of operation

Finally, a networked environment would allow the implementation of local information systems (web/mail servers) that could be used to train internally on internet applications in the absence of full internet access at the student level

5 Deployment Issues

In order to achieve the maximum impact, equipment deliveries will need to be closely coordinated to coincide with training programs and semester schedules Even a one-month delay would be unacceptable

UNRWA is aware of the need to streamline computer hardware procurement and delivery and has worked hard to ensure that the procurement cycle does not hinder large equipment purchases The procurement office has worked to find creative solutions to procurement procedures However, it bears repeating that this area needs flexibility when large procurement and development programs are at stake Procuring computer hardware in as short a period as possible (maximum 2 months from start to finish) will allow for considerable resource and equipment gains, especially over the next two quarters as chip specifications are poised to change dramatically UNRWA must not force itself into buying out of market technologies

C. CURRICULUM AND STAFF DEVELOPMENT

1 Instructor Training Needs

Training and retraining should cover the following areas

- PC Hardware and Software Maintenance
- Windows NT Network Deployment and Maintenance
- Business and Financial Applications
- Paramedical Applications
- Graphic Design and Desktop Publishing
- Computer Aided Design (AutoCAD)

Any future updating and upgrading of the computer labs at the vocational centers must be structured so as to provide maximum impact across as many areas of specialization as possible Without a comprehensive retraining program, the true value of any equipment upgrade will go unrealized and may well cause as many problems as it solves Instructors at the field level know that they suffer from outdated and under-developed skills Retraining will raise instructor effectiveness and improve morale among the staff

The need for training in conjunction with hardware and software upgrades cannot be overstated While there have been ongoing efforts to deliver instructor-training within the various trade and semi-professional specializations, the lack of funds and up-to-date equipment has made staff development in this area a lower priority As stated above, UNRWA maintains 11 specialists within the VTED at its Amman headquarters who are responsible for overall curriculum development and staff training

Deploying local area networks in each field of operations will require a significant instructor-training program covering both network installation and administration Such a program should be designed such that those trained are required to reproduce this training at their home centers in conjunction with local network installation The introduction of Windows NT networking skills is important, as the proposed upgrade is predicated on the introduction of a networked environment

With the recent introduction of information systems courses at a number of centers and as local staff are expected to participate in the maintenance of the local networks, such training is indispensable Given the high level of expertise at each center, such a training program should be highly successful

2 Program Development & The Internet

The need for staff and curriculum development is evident at every VTC, both at the field and headquarters levels The immediate need is for technical training on advanced topics such as network implementation and administration, hardware and software implementation and maintenance In the long term, it is important to strengthen instructor training within the semi-

professional areas of specialization banking and financial management, architectural and civil engineering and paramedical sub-disciplines Again, retraining is needed at both the field and headquarters levels Establishment of an internet capacity would greatly improve program coordination between headquarters and the field and would allow for significant external support

3 Curriculum and Staff Development

As detailed above, curricula are in need of significant revision For many courses this will include not only curriculum revision but also the introduction of completely new topics While the VTED specialists are all very well qualified, they should not be asked to undertake curriculum development on such a scale This would be a very inefficient use of resources Rather, VTED should look to build strategic partnerships with external agencies capable of delivering curriculum modules that can be adapted to update and overhaul the existing programs (See *Strategic Partnerships* below)

With internet access, the VTED should aim to develop mentor relationships with other vocational training centers, universities and field experts Online and distance education should be fully explored and efforts made to introduce online program management Online training programs, remote staff development and distance curriculum support are the fastest growing areas in education With minimal investment and the proper partners, UNRWA could establish a regional model for education extension (See *Appendix IV* for further thoughts on this topic)

Currently, staff development is coordinated through field visits, by post and by telephone Over the past eight years the budgets for staff development and specialist oversight through field visits have been reduced, resulting in the deterioration of instructor skills One possible remedy for this situation is the introduction of a VTED Intranet In all but the Syrian field of operations, internet access for instructors at the field and headquarter levels would provide a range of low cost benefits including improved oversight, shared curriculum development, external expert input and access, not to mention exposure to a number of outside programs though email, news groups etc

Given the costs and technical constraints, this effort should aim to provide access for instructors and specialists, thereby facilitating the work of the VTED specialist staff at headquarters – Amman, connecting instructors to one another by email and through a VTED website Such facilities would encourage shared curriculum development and replication of proven course modules It would also improve efforts to standardize the curriculum across the different fields of operation

In the medium term, Internet access would provide a medium through which the VTED could develop distance learning and training opportunities for staff in conjunction with a partner such as specialized vocational training institutes or through a consortium of other vocational training centers and/or universities

VTED instructors are in need of continual training so that they remain acquainted with the latest market and software developments Improving links with the private sector and internet

connectivity for the instructors will open a wide range of affordable instructor-training opportunities otherwise not available Initial investigation revealed significant interest in such links for technical assistance to be provided by Scottish Knowledge, a consortium of Scottish universities with extensive distance learning applications To this end, UNRWA has invited Scottish Knowledge to participate in its programs as a strategic partner (See *Appendix IV*)

Experience in this area would also allow UNRWA to begin exploring the possible development of more advanced applications from the deployment of extension facilities through community "tele-centers" to development of distance employment opportunities (tele-work)

With schools and training centers in five fields of operations, UNRWA has a unique opportunity to establish itself as a Middle East leader in distance education With core funding for a major hardware, software and staff upgrade and internet access for trainers, the VTED would be well placed to play an important role in this effort by qualifying for educational development grants to introduce significant distance education programs

4 Measuring Market Demand & Private Sector Linkages

Although the VTCs maintain a number of channels to the private sector, the use of analytical methods to measure market trends is underdeveloped and underemployed due to understaffing at the specialist and field levels Over the past two years, a number of new course offerings have been introduced that are designed to fill documented and perceived market needs

A tremendous need exists for market surveying at the field level within each area of specialization in order to measure recent trends and demands within local markets A significant effort to review each area of specialization through market surveying would provide a sound basis for meaningful curriculum revision The outstanding efforts undertaken by the RWTC in preparation for the introduction of a graphic design course provide an excellent model for future market surveying (*see Appendix III*)

Market surveying is an area that calls for a much wider effort that should be addressed within a national framework A number of bodies are emerging in the West Bank and Gaza that can support comprehensive market surveying The PA Ministry of Labour has done outstanding work in this area and is naturally suited for efforts in this area

Monitoring market trends could be further enhanced through the hosting of an annual or bi-annual roundtable with select business and community leaders at the field level in order to discuss their changing needs and to increase contacts with the private sector

5 Gender Issues – Access & Suitability

Over the past 10 years UNRWA has made a significant effort to expand training opportunities for women Women now make up 30% of all trainees in the VTE program (trade and semi-professional), an increase of nearly 70% over eight years While the more traditional trade courses are still dominated by male trainees, women now make up close to 50% of the trainees at

the semi-professional level where they benefit from higher employment rates All centers are coeducational with the exception of the RMTC (counterpart of the RWTC)

UNRWA has also made an effort to expand opportunities for women at the trainer and staff level by actively seeking women trainers These efforts should be encouraged and should continue until women make up an acceptable proportion of the VTE trainers

Over the past three years, restriction on travel and resident permits have limited the ability of Gazan women to participate in training programs such as those offered by the RWTC, one of a handful of centers that offers significant opportunities for women from Gaza In the past, women from Gaza received 45 places within the RWTC After going unfilled for two years, these places are now being given to women from the West Bank This is a problem faced at every institute of higher education in the West Bank

6 Expanding On-The-Job Training Programs

The VTE program currently provides graduates with two weeks of on-the-job training Under this program students are placed with public and private sector concerns within their area of specialization Such programs provide valuable experience for students and often lead to job opportunities following completion of their studies The on-the-job training program also provides a reliable indication of local market demand and is considered highly beneficial to both students and the VTCs

As currently structured, the on-the-job training program provides meaningful but limited benefits and should be expanded to provide additional opportunities for students Specifically, the VTED could introduce the on-the-job training program during the summer between the first and second year of training and/or for a longer period of time at the end of the second year Expansion of the on-the-job training program would provide additional skills acquisition opportunities, increase the likelihood of future employment, and increase the exposure of the VTCs within local markets

D. Facilities Maintenance

The computer facilities at the VTCs are in continual need of technical support While this is due to the age of the hardware and software, any future upgrades will incur their own maintenance needs At present, the computer instructors provide technical support for the computer labs with occasional support from UNRWA technical staff All centers report significant staff time being spent on maintenance and repair, reducing trainer effectiveness

While the computer instructors should be capable of providing support on an as-needed basis, the size and complexity of the computer training facilities now warrants the appointment of a technical post to support the field training facilities Given the close proximity of a number of the field centers, one technician could serve multiple centers

The introduction of new computer facilities over the past eight years, coupled with clear upgrade/expansion needs has created the need for technical staff to maintain the training

The introduction of new computer facilities over the past eight years, coupled with clear upgrade/expansion needs has created the need for technical staff to maintain the training facilities In order to adequately support ongoing computerization within the Agency, UNRWA should add a technical post at each center to cover computer lab maintenance

E. Strategic Partnerships

Commitment from one or more donors should be used as *core* funding to attract other donors and strategic partners Fortified with new hardware and comprehensive staff development budgets, the VTED should explore establishing mentor relationships with hardware/software providers, universities/vocational training programs and other external agencies

As an educational institution, VTED qualifies for significant hardware and software reductions (hereto under-used by UNRWA when purchasing equipment) Similarly, VTED can participate in a number of certification programs offered exclusively to educational facilities Meetings held with Microsoft and major hardware providers have already generated commitments for both educational licensing, pledges of *in-kind* support and donations of official curriculum materials Furthermore, a number of parties are currently working together to examine additional intervention strategies that can support the UNRWA programs

Such relationships should aim to develop long-term staff development opportunities and ongoing price reductions

F. Sustainable Funding, Continuing Education and the Private Sector

As noted during visits to the field facilities, the VTCs are in desperate need of equipment upgrades While donors for such an upgrade may be forthcoming, UNRWA and the VTE program must begin to explore sustainable funding alternatives

A new lab will provide a medium-term solution but will also generate associated and ongoing costs and, in time, will need to be replaced once again (the next upgrade can be achieved through motherboard replacement only)

In conversations with field directors and with instructors, the idea of utilizing unused facility time for internal fundraising was raised repeatedly At present, the computer labs at the VTCs are fully utilized during the school hours (7 30 – 3 00) They sit empty during the evenings, on the days off and during the summer vacation months There is significant time during which the labs remain unused During this time, the VTCs could utilize their facilities to offer outside training courses to cover costs These courses could be tailored to meeting multiple community and facility needs

Offering external courses would have multiple benefits

- Income for hardware/software upgrades and staff development
- Increased contacts with the market providing additional market intelligence
- Additional income for instructors
- Expanded on-the-job training opportunities for trainees
- Expanded opportunities for continuing education

It should be noted that short equipment life (2 – 3 years) means that labs must operate as often as possible in order to extract as much value from the lab as possible This means taking advantage of the lab during the evenings, on weekends and over the summer

If such a program were to be adopted, it is important that the initiative come from the field and that benefits accrue to the field centers themselves rather than the agency as a whole Additionally, opportunities for trainees should remain the primary objective In order to achieve this, participating organizations or companies could be asked to accept one to three on-the-job trainees

An income-generating program would need to be carefully structured and would require significant discussion within the Agency As this would not be a "for profit" venture, it should not require any policy change It is worth noting that this idea received tremendous support at the field level and within the VTED Such a program could provide exceptional benefits if properly structured

APPENDIX I: ONLINE REFERENCES

McGill University, World Bank & UNESCO Project
http //www arts mcgill ca/mepp/pdm/pdfront html

Arab World Online
http //www awo net/

Learning Technologies Events in the United States
http //www olt-bta hrdc gc ca/conferdir html

University of Wisconsin
Distance Education Clearinghouse
http //www uwex edu/disted/home html

University of Maryland Distance Learning Program
http //www umuc edu/ide/modlmenu html

University of the Highlands and Islands
http //www uhi ac uk

UNDP Technical Resource Site
http //www undp org/tcdc/welcome htm

World Bank infoDev Resources
http //www worldbank org/infodev/links html

Palnet Communications
http //www palnet com/

Birzeit Palestine Resource Page
http //www birzeit edu/web#palestine

Palestinian Refugees ResouceNet
http //www arts mcgill ca/mepp/prrn/prfront html

Arab1001Sites com
http //www 1001sites com/

United Nations Information
Center on the Question of Palestine
http //homino UN org/unispal nsf?

Byte Middle East
http //www knowledgeview co uk/byte

The Arab World Web Pages
http //www arabworld com/

Arab Media Internet Network
http //www amin org/

Arabia On Line
http //www arabia com/

Talisman Networking Project
http //www talisman hw ac uk/

Information Society Project Office
http //www ispo cec be/

World Bank infoDev Project
http //www worldbank org/infodev/

Information Systems in Developing Countries
http //members aol com/kabjian/itindev htm

Development Internet Resources
http //www igc org/igc/issues/develop/

International Development Research Center
http //www idrc ca/

The Bellanet Initiative
http //www bellanet org/

International Development Network
http //www idn org/

UNDP Sustainable Development Networking Project
http //sdnhq undp org/evals/eval97 html#E10E2

ADEC Distance Education Consortium
http //www adec edu/

Virtual Classroom Technology
http //www nevasoft com/corp/

Center for Distance Learning Research
http //www cdlr tamu edu/

The Open University
http //www open ac uk/

The United Nations Technology Revolution Study
http //www undp org/undp/comm/techn htm

Network Startup Resource Center
http //www nsrc org/

Applied Rural Telecommunications
http //www bcn boulder co us/aerie/

The Acacia Initiative
http //www idrc ca/acacia/

Global Knowledge 97 Document Archives
http //www2 globalknowledge org/text/document_archives html

APPENDIX II UNRWA DEPARTMENT OF EDUCATION FLOW CHART

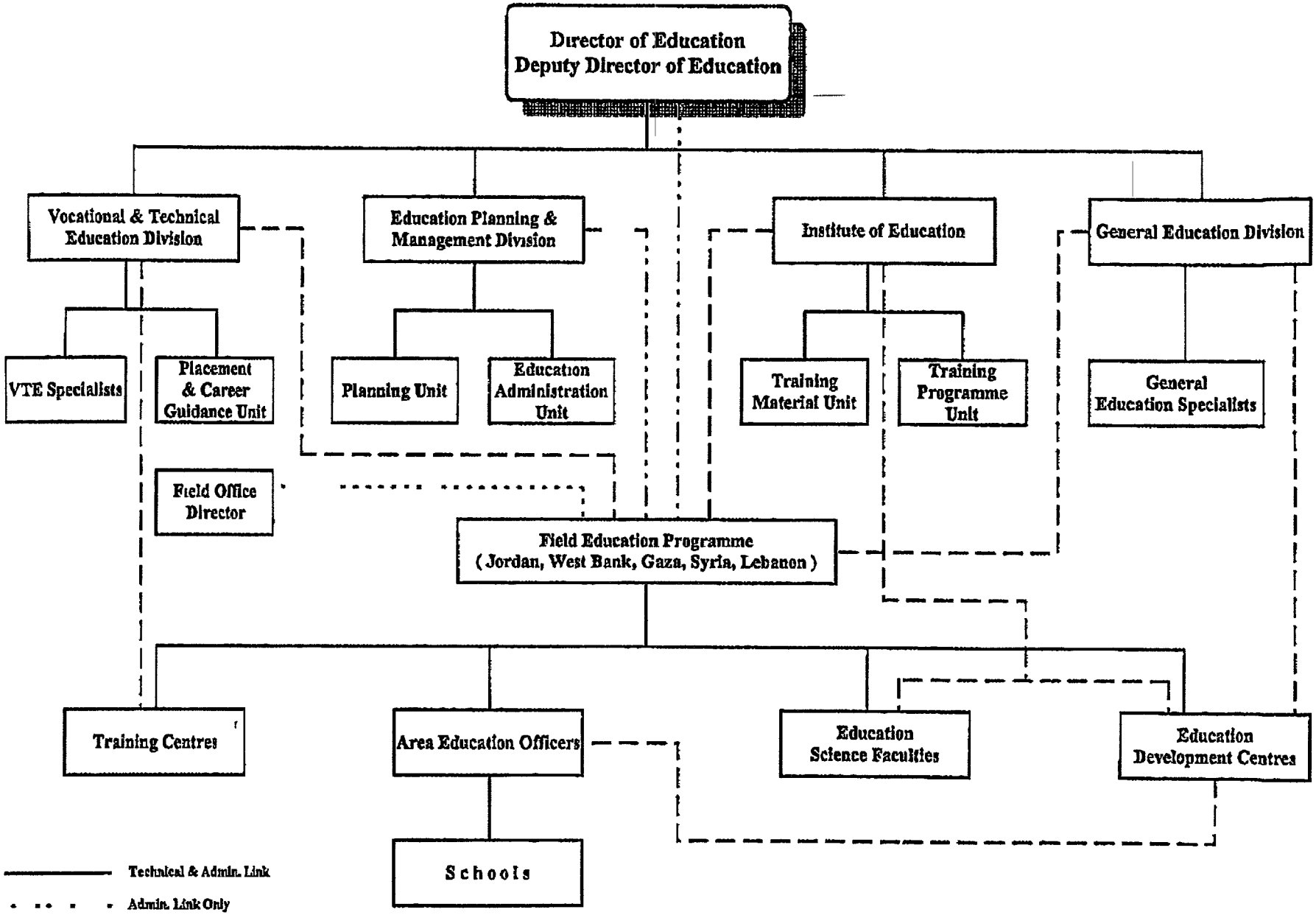

Chart No. -1-

APPENDIX III: COURSE RATIONALIZATION
THE RAMALLAH WOMEN'S TRAINING CENTER – GRAPHIC DESIGN

FINDINGS

a) General observation The idea of introducing graphic design was initated when a substantial increase in the number of institutions who were ready to offer RWTC services relevant to graphic design was noticed By walking in the streets, going through the papers, and watching TV, one can easily observe the difference in number of advertisements displayed this year as opposed to the previous two or three years.

b) Survey. quantitative information pertaining to actual number of registered institutions offering services relevant to graphic design was officially obtained from Chambers of Commerce of Ramallah, Nablus, Jenin, Tulkarm, and Hebron area (Annex 1) includes letters addressed to persons in-charge of the above mentioned chambers as well as copies of lists received in the names of registered institutions Table 1 presents the geographical area vs the number of relevant institutions The table presents a grand total of 149 with the highest number of registered institutions being in Ramallah area followed by Nablus

c) Questionnaires The above mentioned lists were carefully studied to screen out institutions who do not offer relevant services. As a result, 54 questionnaires were distributed Only 27 were completed and received (Annex 2) includes the questionnaire prepared. (Annex 3) presents the questionnaire's analysis done using SPSS software.

Questionnaire Results

The questionnaire aimed at assessing current situation of the various institutions in terms of. capacity of work, capacity of production; demanded type of design, number and qualifications of employees and availability of tools and equipment. It also aimed at testing the extent of demand for graphic design and

graphic designers, willingness of institutions to cooperate with RWTC in training (On-the-Job-Training)RWTC students, and willingness to employ RWTC graduates

From those who responded,

- 85 2% said that there is an increase in demand for "Graphic Design"
- 96 3% said that the need for specialized graphic designers is high
- 96 3% said that they are willing (to some extend) to cooperate in training RWTC graduates.
- 100% said that they will employ RWTC graduates, of which 59 3% have limitted vacancies
- Only 7 7% said that their employees are specialized in graphic design.
- 61.5% said that their employees are college graduates, but not specialized in graphic design
- 76 9% said that currently, the capacity of work and production rate is high

As for the tools; most use IBM computers and relevant soft-ware, scanners, and color printers Most requested skills pertaining to using computer for design, drawing abilities, creativity and art appreciation.

Recommendation

In the light of the above, it is recommended to establish "Graphic Design" course

d - Personal interviews - Four interviews were concucted, two with Arab Israeli specialists who graduated with BA in graphic design from Israli institutions and are currently working in the field, and two palestinians who graduated with M A from Italy and Germany, and are currently working in the field in Ramalla From the intervies; the following information were gathered compared and tailored to respond to market demand taking into consideration RWTC budget, and availability of

qualified staff -

1 Course requirements and time allotment
2 workshops needed
3 Equipment needed
4. Books/Journals/manuals and how to secure them
5 Trainees admission requirement, (Pre -test)
6 Willingness of interviewed persons to teach the highly specialized courses on part-time basis.

e) **INTERNET:**

Internet was utilized to gather information regarding -

a) Universities /Colleges offering graphic design course that leads to B A or Diploma 100 Universities/Colleges were used as references
b) General information about the programme
c) Course requirement
d) Time allotment (no of Credit hours/course and total credits required)
e) Sequence of courses (pre-requisets)
f) Course description
g) Library search for books/Journals (Annex 4).
f) E-Mail, and Fax were used to corresponed with Israeli Universities who offer the specialization. Consequently booklits, brouchors and programmes (written in hebrew language) were forwarded to RWTC (Annex 5) Outside assistance for translation was used Results of Personnal interviews and internet search lead to proposing the attached time allotment (Annex 6) a long with course descriptions (Annex 7)

APPENDIX IV: STRATEGIC PARTNERS

Development of strategic partnerships with local, regional and international actors will be essential for program build-out Such relationships should be forged with equipment and software suppliers and educational institutions concerned with the issues surrounding vocational training

UNRWA recently invited that Scottish Knowledge join in a partnership for the provision of curriculum development support While this is contingent of finding additional funding, it represents a significant development in the VTED program (*copy of invitation letter attached*)

STAFF DEVELOPMENT TRAINING AREAS

While significant resources will be dedication to staff development, this is an area worthy of an effort unto itself To this end VTCs should explore collaborative relationships for the provision of advanced training opportunities

Immediate training needs would cover the following areas

Network Installation & Administration
PC Hardware / Software Installation
PC Hardware / Software Administration
Ethernet Network Installation
NT Systems Installation
NT Systems Administration
NT Client / Server Issues

MS Office Suite
Business & Finance
AutoCAD
Paramedical Applications
Graphic Design
PC Machine Maintenance
Internet Applications & Services

INTERNET ACCESS DEVELOPMENT

The provision of internet access at the UNRWA VTCs would provide a flexible infrastructure that would allow markedly increased responsiveness to local instructor and market needs and a control and coordination mechanism capable of underpinning the current and future projects Further, as the centerpiece for future development such facilities would begin to address the fact that online/distance education characterizes the changing face of education

In the first phase, introduction of internet access would serve the overall curriculum development needs of the VTED by providing a quick, reliable and dynamic communications medium between the specialists and the instructors across the agency working within the same specialization It would facilitate the sharing of course material, collaborative curriculum development, the provision of technical support, online collaboration with external partners and overall project coordination

The second phase should aim to deliver advanced expertise from external sources leading to the implementation of online instructor training courses A number of universities and vocational training programs that are engaged in such activities have expressed interest in joining UNRWA

in a collaborative project of this nature Such an initiative could/should be expanded to include any/all parties providing vocational training opportunities in the areas of operation

UNITED NATIONS RELIEF AND WORKS AGENCY FOR PALESTINE REFUGEES IN THE NEAR EAST
OFFICE DE SECOURS ET DE TRAVAUX POUR LES REFUGIES DE PALESTINE DANS LE PROCHE-ORIENT
P O Box 371, Gaza City
P.O. Box [illegible], IL - 76100, Ashqelon
or
Vienna Office PO Box 700, A-1400 Vienna, Austria
وكالة الأمم المتحدة
الإغاثة وتشغيل اللاجئين الفلسطينيين في الشرق الأدنى
UNRWA Headquarters, Gaza
Tel (+972-7) 6777 000
Fax (+972-7) 6777 [illegible]

FAX MESSAGE

FI 300(117) 12 July 1998

To. Scottish Knowledge
Attn. Mr Steve Beere
Chief Executive
Fax. 0044-131-4677809
Tel. 0044-131-4677848

From: Chief, External Relations Office
UNRWA Headquarters
Fax 00972-7-6777698
Tel: 00972-7-6777721

Number of pages 3 (including this one)

Re **Letter of Invitation**

Dear Mr. Beere,

Reference is made to the discussions between Mr Rory Plumster and your organisation, Scottish Knowledge It is our understanding that Scottish Knowledge is interested in becoming a strategic partner in the planned upgrading of UNRWA's vocational and semi-professional training centres To support your organisation in raising the necessary support, I am pleased to attach UNRWA's Letter of Invitation requesting Scottish Knowledge to provide expertise in support of the computer project

Please do not hesitate to contact the External Relations Office if you require more information

May I take this opportunity to thank you for your support of your Scottish Knowledge for UNRWA" programmes of assistance to Palestine refugees

Yours sincerely,

Saflye Caglar

APPENDIX V: REPRESENTATIVE COURSE OUTLINES

RAMALLAH MEN'S TRAINING CENTER
Marketing and Product Management
1998/1999

SUBJECT	Periods per week 1st Sem. CR.	CL.	2nd Sem. CR.	CL.	3rd Sem CR.	CL.	4th Sem. CR.	CL.	CR. HR	CL PDS	Total
COLLEGE REQUIREMENT											
Arabic Development		-			3	3			3	3	54
English Language		5	3	5	-	5	-	5	3	20	360
Arabic Language			3	4					3	4	72
Islamic Thought	3	4							3	4	72
Sub-Total	3	9	6	9	3	8	-	5	12	31	558
PROGRAMME REQUIREMENT											
Economics	3	5							3	5	90
Introduction to Computer	3	7							3	7	126
Management			3	5					3	5	90
Marketing			3	5					3	5	90
Accounting 1 & 2	-	5	3	4	-	4	3	4	6	17	306
Fund. of Financial Management					3	6			3	6	108
Statistics	3	6							3	6	108
Sub-Total	9	23	9	14	3	10	3	4	24	51	918
SPECIALIZATION REQUIREMENT											
Consumer Behaviour			3	5					3	5	90
Specialized Marketing Associations							3	5	3	5	90
Salesmanship & Advertising							3	5	3	5	90
Market Studies & Research					3	4			3	4	72
Marketing Services							2	5	2	5	90
Commercial Correspondence					3	6			3	6	102
Imports and Exports							3	5	3	5	90
Sales Management					3	5			3	5	90
Purchasing and Warehousing					3	5			3	5	90
Sub-Total			3	5	12	20	11	20	26	45	810
ENRICHMENT REQUIREMENT											
Arabic Typing, Windows & Winword	-	5	-	4	-	4			-	13	234
English Typing & Excell	-	5					-	5	-	10	180
Physical Education			-	3					-	3	54
Practical Training			-	3			-	4	-	7	126
Public Relations			-	4					-	4	72
Feasibility Studies							-	4	-	4	72
Sub-Total	-	10	-	14	-	4	-	13	-	41	738
On-The-Job Training			3	-			3	-	-	-	-
Grand Total		42		42		42		42		165	3024

RAMALLAH MEN'S TRAINING CENTER

Programming and Data Base

1998/1999

SUBJECT	Periods per week												CR. HR	CL PDS	Total
	1st Sem.		2nd Sem.		3rd Sem.		4th Sem								
	CR.	CL.	CR.	CL.	CR.	CL.	CR.	CL.							
COLLEGE REQUIREMENT															
Arabic Development		-	3	3	-	-	-	-					3	3	54
English Language	3	5		5	-	-	-	-					3	10	180
Arabic Language	3	4	-	-	-	-	-	-					3	3	72
Islamic Thought	-	-	3	4	-	-	-	-					3	4	72
Sub-Total	6	9	6	12	-	-	-	-					12	21	378
PROGRAMME REQUIREMENT															
Statistics	-	-	-	-	-	-	3	6					3	6	108
Accounting	-	-	-	-	3	5	-	-					3	5	90
Management	-	-	3	5	-	-	-	-					3	5	90
Introduction to Computer Science	3	6	-	-	-	-	-	-					3	6	108
Mathematics	3	5	-	4	-	-	-	-					3	9	162
Technical English	-	-	-	-	3	5	-	5					3	10	180
Sub-Total	6	11	3	9	6	10	3	11					18	41	738
SPECIALIZATION REQUIREMENT															
Pascal Programming	3	6	-	-	-	-	-	-					3	6	108
Operating Systems	3	5	-	-	-	-	-	-					3	5	90
Data Structure	-	-	-	-	3	3	-	3					3	6	108
C Language Programming	-	-			3	6	-	-					3	6	108
Computer Net Work						4	3	4					3	8	144
Software Engineering							3	5					3	5	90
Introduction to Data Base			3	5									3	5	90
Data Bsse Management I & 2					3	5	3	5					6	10	180
Office Automization 1 & 2			3	3	-	4	3	4					6	11	198
Sub-Total	6	11	6	8	9	22	12	21					33	62	1116
ENRICHMENT REQUIREMENT															
Practical Training	-	3	-	3	-	3	-	2					-	11	198
Computer Business Application			-	2	-	-							-	2	36
Business Graphics					-	3							-	3	54
English Typing	-	4											-	4	72
DOS & WINDOWS	-	4											-	4	72
Visual Basic			-	4									-	4	72
Access			-	4									-	4	72
Interactive Multimedia					-	4							-	4	72
Graduation Project							-	8					-	8	144
On-The-Job Training			3	-			3	-					6	-	-
Sub-Total	-	11	-	13	-	10	-	10					-	44	792
Grand Total		42		42		42		42					92	168	3024

[redacted] COURSE: ELECTRONIC CONTROL AND COMPUTER APPLICATIONS
[redacted] CENTRE: DAMASCUS TC

SUBJECTS	PERIODS PER WEEK												TOTAL NUMBER OF PERIODS
	1ST YEAR						2ND YEAR						
	1ST SEM			2ND SEM			3RD SEM			4TH SEM			
	20 WKS			20 WKS			20 WKS			18 WKS			
MAJOR ELECTRONICS SUBJECTS	TO	TH	PR	TO	TH	PR	TO	TH	PR	TO	TH	PR	
TROUBLESHOOTING AND REPAIR TECHNIQUES				2	2					6		6	148
SENSORS AND CONTROL TECHNIQUES				6	3	3							120
COMPUTER AIDED DESIGN							5		5				100
POWER ELECTRONICS							8	4	4				160
MICROPROCESSOR TECHNOLOGY										8	4	4	144
PLC TECHNOLOGY										7	4	3	126
SUB-TOTAL				8	5	3	13	4	9	21	8	13	798
MAJOR COMPUTER SUBJECTS	TO	TH	PR	TO	TH	PR	TO	TH	PR	TO	TH	PR	
MICROCOMPUTER ARCHITECTURE	4	2	2										80
MICROCOMPUTER MAINTENANCE AND SUPPORT	5		5	5		5	5		5	5		5	330
MICROCOMPUTER DEVICES				4	4								80
DATA COMMUNICATIONS AND NETWORKS							4	2	2	4	2	2	152
MICROCOMPUTER SOFTWARE APPLICATIONS				5		5							100
MICROCOMPUTER OPERATING SYSTEMS	4	2	2							4		4	152
PROGRAMMING AND PROBLEM SOLVING				4	2	2	4	2	2				160
SUB-TOTAL	13	4	9	18	6	12	13	4	9	13	2	11	1114
MINOR SUBJECTS	TO	TH	PR	TO	TH	PR	TO	TH	PR	TO	TH	PR	
COMPUTER SYSTEMS AND APPLICATIONS	4	4											80
ELECTRICAL THEORY	6	3	3										120
MATERIALS AND COMPONENTS	4	2	2										80
MEASURING INSTRUMENTS	4	2	2										80
BASIC ELECTRONICS				6	3	3							120
WORKSHOP PRACTICE				5	1	4							100
ANALOGUE TECHNIQUES							6	3	3				120
DIGITAL TECHNIQUES							7	4	3				140
PROJECTS										5		5	90
SUB-TOTAL	18	11	7	11	4		13	7	6	5		5	930
GENERAL SUBJECTS	TO	TH	PR	TO	TH	PR	TO	TH	PR	TO	TH	PR	
APPLIED MATHEMATICS	6	6											120
ENGLISH LANGUAGE	5	5		5	5		3	3		3	3		314
SUB-TOTAL	11	11		5	5		3	3		3	3		434
ON-THE-JOB TRAINING													84
TOTAL	42	26	16	42	20	15	42	18	24	42	13	29	3360

TOTAL NUMBER OF PERIODS
TOTAL NUMBER OF THEORETICAL PERIODS
TOTAL NUMBER OF PRACTICAL PERIODS

APPENDIX VI GENERAL TRAINING NEEDS

The above report addresses computer-training programs at the semi-professional level However, A number of trade specializations are also in need of a complete overhaul to bring skills training up to date

For example, within the electronics trade specialization, automotive training is an area where an outstanding effort could be made Today's cars are driven by microprocessors and sensors that can only be maintained with advanced computer aided hardware The introduction of such hardware is costly and would require significant instructor retraining However, this area could provide a significant area of employment, as there are very few technicians in the market with these types of skills

Other trade level courses in need of similar upgrade and overhaul include

- General Electrician
- R/TV Maintenance
- Diesel and Agricultural Mechanic
- Material Testing Technicians
- Refrigeration and Air Conditioning
- Plumbing and Central Heating

APPENDIX VII: ESTIMATED COST SCHEDULES

All costing based on educational pricing as determined through numerous communications with hardware and software suppliers Software is given as a single item based on discussions with Microsoft Middle East A software configuration list is detailed below

Consolidated Quantities & Costs

Lab Hardware	Quantity	Unit Price	Total Price
Pentium II 300 / 64 MB RAM / Desktop	227	$1,000 00	$227,000 00
Win98 OS / Arabic Edition	227	$0 00	$0 00
4 3 GB Hard Drive	227	$0 00	$0 00
3 5 Floppy Drive	227	$0 00	$0 00
24X CD ROM	227	$0 00	$0 00
4 MB Graphic Accelerator	227	$0 00	$0 00
Multimedia Kit	227	$0 00	$0 00
15" Monitor	227	$150 00	$34,050 00
10/100 PCI Ethernet Card + RJ-45 Adapter	227	$85 00	$19,295 00
HP LaserJet 5 Printer + External Network Card	8	$1,500 00	$12,000 00
HP Scanner + Cable	8	$500 00	$4,000 00
Plotter A0 (AutoCAD Applications) + Cable	6	$8,000 00	$48,000 00
LCD Projection Unit + Cable	8	$2,850 00	$22,800 00
Lab Refurbishment	12	$4,250 00	$51,000 00
Lab Furniture	12	$2,000 00	$24,000 00
Air Conditioner / Heating Unit	12	$1,500 00	$18,000 00
Subtotal			**$460,145 00**
Lab Hardware Upgrade	**Quantity**	**Unit Price**	**Total Price**
64 MB RAM	110	$85 00	$9,350 00
10/100 PCI Ethernet Card + RJ-45 Adapter	110	$70 00	$7,700 00
Win98 OS / Arabic Edition	110	$0 00	$0 00
Subtotal			**$17,050 00**
Network Server Hardware	**Quantity**	**Unit Price**	**Total Price**
Pentium II 350Hz / 128MB RAM / Full Tower	8	$6,500 00	$52,000 00
2 Mirrored 4GB SCSI Hard Drives			
512K Level II Cache			

10/100 PCI Ethernet Controller			
WinNT OS 4 0 / 5 0			
3 5 Floppy Drive			$0 00
2X / 24X Read & Write CD ROM			$0 00
4 MB Graphic Accelerator			$0 00
Speakers/Sound Card			$0 00
15" Monitor	8	$150 00	$1,200 00
Tape Drive Backup + Cable	8	$250 00	$2,000 00
Subtotal			**$55,200 00**
Network Hardware	**Quantity**	**Unit Price**	**Total Price**
UPS 10,000 KVA (Power Stablizer)	37	$1,500 00	$55,500 00
16 Port Hub	14	$500 00	$7,000 00
Ethernet Cable (meters)	7800	$0 18	$1,404 00
Terminators	327	$0 27	$88 29
RJ-45 Connectors	327	$0 25	$81 75
Cable Tester	8	$45 00	$360 00
Cable Crimper	8	$12 00	$96 00
Master Tool Kit	8	$75 00	$600 00
Plastic Conduit (meters)	2600	$0 34	$884 00
Network Installation	8	$1,200 00	$9,600 00
Subtotal			**$75,614 04**
Total Hardware & Software Costs			**$608,009 04**
Total Software (See note below)			**$60,000 00**
Shipping + Insurance (10% Hardware)			**$60,800 90**
Additional Post Creation			**$150,000 00**
Total Training Costs			**$72,360 00**
Contingency Overruns (3%)			**$18,240 27**
2 Years Technical Support (5%)			**$30,400 45**
Total Project Costs			**$999,810 67**